

## ABSTRACT OF THE DISCLOSURE

During reception of a training signal in a received signal  $\mathbf{R}(n)$  an estimated impulse response value  $\mathbf{H}_m(n)$  of an M-channel channel, and a tap coefficient  $\mathbf{G}(n)$  of a linear filter 111 is calculated by an adaptive algorithm through the use of the received signal  $\mathbf{R}(n)$  and the training signal  $b(n)$ . For an information symbol of the received signal  $\mathbf{R}(n)$ , the received signal  $\mathbf{R}(n)$  is subjected to linear filtering with the most recently calculated tap coefficient  $\mathbf{G}(n)$ , and the linear filtering output  $\mathbf{Z}(n)$  and the most recently estimated impulse response value  $\mathbf{H}_m(n)$  are used to calculate a soft decision value  $\lambda_1$ .

10 In the second and subsequent rounds of equalization, the likelihood  $b'(n)$  of a soft decision value  $\lambda_2[b(n)]$  from a decoder is calculated, and a replica is generated by linear-filtering the likelihood  $b'(n)$  with an estimated impulse response value vector  $\mathbf{H}_L(n)$  obtained by approximating intersymbol interference with the current code  $b(n)$  to zero. A difference signal  $\mathbf{R}_e(n)$

15 between the replica and the received signal is calculated, and the estimated impulse response value vector  $\mathbf{H}_L(n)$  is used to update the tap coefficient  $\mathbf{G}(n)$ . Then the signal  $\mathbf{Z}(n)$  is obtained by linear-filtering the difference signal  $\mathbf{R}_e(n)$  with the updated tap coefficient  $\mathbf{G}(n)$ , and the signal  $\mathbf{Z}(n)$  and the estimated impulse response value vector  $\mathbf{H}_L(n)$  are used to calculate the soft decision

20 value  $\lambda_1$ .